Computer and Information Technology

Second Grade Preparatory

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D.M.RAZK موقع الدكتور محمد رزق معلم الكيمياء التعليمي

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Unit (1)
Artificial Intelligence and Protecting Our Digital Data

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First Lesson

Smart Systems and Their Impact on Climate Change

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Objectives:

Place a (√) mark in the "...appropriate box for

At the end of the lesson, I will be able to	Good	Very Good	Need more effort
* Explain the concept of interconnected smart systems (Internet of Things, Artificial Intelligence, and Robotics).			
* Deduce the impact of interconnected smart systems in addressing environmental problems (air pollution, drought, etc.).			
* Propose the largest possible number of ideas for employing smart systems to help protect the environment and reduce the effects of climate change.			

Let's Interact Together:

What are interconnected smart systems? How can they contribute to protecting our planet?

Let's Learn:

In previous years, we learned about the concept of the Internet of Things (IoT), which connects various devices to the internet to exchange data. We also learned about Artificial Intelligence (AI), which is the ability of a machine to think and make decisions like a human. Additionally, we learned about Robotics, which are devices that can perform tasks similar to what humans do. In this lesson, we will explore how these smart systems work together in an interconnected way to become smarter and more useful in our lives.

Dear student, imagine a smart robot that can clean your house, move on its own, avoid obstacles, and charge itself when its battery is low. This robot uses IoT to connect to the internet, AI to analyze information and make decisions, and Robotics to move and perform tasks.

When these three technologies work together, we get what is called *Connected Smart Systems*.

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First: How Connected Smart Systems Work (Internet of Things with Artificial Intelligence and Robotics)

Today, devices communicate with each other, think, and move. How does this happen? It happens through a new technology that combines three important fields:

* **Internet of Things (IoT)**
* **Artificial Intelligence (AI)**
* **Robotics**

When we integrate IoT with AI and Robotics, we get interconnected smart systems that can connect to each other, think, and execute tasks without constant human intervention.

Interconnected Smart Systems

Dear student, in smart homes, there is a connection between the three interconnected smart systems. Through IoT-connected devices, you can control lighting and temperature. Through Artificial Intelligence (AI), the system can notice that you return from school at 2 PM and turn on the air conditioning before you arrive. A robot in the house can also prepare food for you or clean the floor before you enter.

From now on, we can start thinking and designing new and useful ideas using these wonderful systems.

Dear student, let's consider a simple example of your father's car breaking down on the road. Imagine you are with your father driving on a long road, and suddenly the car stops due to an engine problem. Here, the role of smart systems begins:

1. Internet of Things (IoT)

IoT Function: The car is equipped with sensors connected to the internet. When the breakdown occurs, the car automatically sends a message to the maintenance center or an app on your phone. It determines your exact location using GPS. The car sends a message saying: "Engine failure - Location: Cairo-Suez Road - Kilometer 75."

2. Artificial Intelligence (AI)

AI Function: The AI analyzes the breakdown data and suggests the probable cause (e.g., engine overheating, low oil, etc.). Then, the AI suggests solutions, for example: "Stop the car immediately - a maintenance robot is being sent and is on its way to you."

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3. Robotics:

Robot's Function: A smart robot is directed to the car's location, equipped with tools to inspect the car and fix the minor issue by opening the hood and replacing the damaged part. Then it tells you: "You can now proceed safely." If it cannot fix the problem, it automatically requests a tow truck.

Smart Component	Function
Internet of Things (IoT)	Sending information and determining location.
Artificial Intelligence (AI)	Analyzing the problem and making the right decision.
Robotics	Performing repairs or providing field assistance.

Second: Practical Applications of Smart Systems in Our Lives:

Devices now rely on Artificial Intelligence (AI), the Internet of Things (IoT), and Robotics to think and operate on their own. We use these smart systems daily without realizing it, whether at home, school, or the hospital. These systems help us save time and effort, making our lives more comfortable and easier.

Here are some examples we see and use in our daily lives:

Smart Home:

IoT: Connects lighting, air conditioning, and appliances to a mobile phone or the internet.

AI: Understands the situation; if the weather is hot, it automatically turns on the air conditioning.

Robotics: May assist with tasks, such as operating a vacuum cleaner or moving objects.

Example: You say to your phone, "Turn on the AC," the command is sent via the internet, and the device determines the best temperature and turns it on.

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School Robot:

IoT: Keeps the robot connected to educational resources online.

AI: Helps it understand students' questions and respond correctly.

Robotics: The robot speaks, writes, or moves to display the answer.

Example: A student asks, "What is the capital of Egypt?" The robot understands the question and answers, "Cairo."

Smart Farming:

IoT: Sensors transmit information about soil conditions.

AI: Analyzes this data to determine if the land needs water.

Robotics: Automatically water the plants or spray pesticides.

Example: If the soil is dry, the system decides to water the land without the farmer's intervention.

Voice Assistant:

IoT: Used to access information via the internet.

AI: Understands what you say and provides a suitable answer.

Robotics: Not present here, as the device does not move, but only speaks.

Example: You say, "What's the weather today?" The device understands your question and answers in a clear voice.

Smart Car:

IoT: Connects the car to satellites and maps.

AI: Monitors the road and analyzes risks.

Robotics: Controls the car's movement, such as stopping or changing direction.

Example: If a child suddenly crosses the road, the car sees it and stops by itself to protect you.

Third: Smart Systems and Their Impact on Climate Change

Today, planet Earth faces significant problems due to climate change, including rising temperatures, air pollution, melting ice, droughts, and floods. Through smart systems, we can monitor the environment, reduce pollution, and protect the planet. Now, dear student, we will review some of these problems and how to reduce and limit them using these smart systems.

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1. Global Warming (Greenhouse Effect):

Dear student, have you noticed that the weather in summer has become hotter than before? This is due to what is known as the "greenhouse effect."

Cause: An increase in harmful gases like carbon dioxide from factories and cars.

Solution using Smart Systems:

IoT: Sensors measure temperature and pollution levels in the air.

AI: Analyzes this data and suggests solutions to reduce pollution.

Robotics: Can plant trees or purify the air automatically.

Example: When the temperature rises, the smart system sends an alert to the government to reduce factory emissions and activate air purification filters.

2. Air Pollution:

Dear student, the air you breathe may be polluted with smoke from cars and factories, which is harmful to our health.

Cause: Car exhaust, factory emissions, and burning trash.

Solution using Smart Systems:

IoT: Measures the percentage of harmful gases in the air.

AI: Identifies polluted areas and suggests reducing the number of cars.

Robotics: Plant vegetation or use devices to purify the air.

Example: In some cities, notifications are sent to residents asking them to stay indoors when air pollution is high.

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3. Water Scarcity and Drought:

Dear student, imagine that crops are not growing because the land is not getting enough water. This is a major problem called drought.

Cause: Excessive water use, lack of rain, and unregulated irrigation.

Solution using Smart Systems:

IoT: Devices measure soil moisture and report when the land needs water.

AI: Calculates the appropriate amount of water to conserve it.

Robotics: Automatically irrigate the land only when needed.

Example: On some farms, the land is only watered when sensors send a signal that it needs water, saving huge amounts.

4. Floods and Heavy Rains:

Dear student, sometimes a lot of rain falls in a short time, flooding the streets and causing floods.

Cause: Climate change leads to severe and sudden rainfall.

Solution using Smart Systems:

IoT: Measures the amount of rain and the speed of water in the streets.

AI: Sends warnings before a flood and suggests rescue methods.

Robotics: Help drain water or rescue people in emergencies.

Example: When sensors detect that the water is rising, the road is automatically closed, and cars are directed to safe routes.

5. Melting Ice at the Poles:

Dear student, in the North and South Poles, there are mountains of ice, but they have begun to melt due to the rise in Earth's temperature.

Cause: Continuous climate change that raises temperatures.

Solution using Smart Systems:

IoT: Monitors the ice and measures its melting speed.

AI: Predicts when the ice will melt and suggests preventive measures.

Robotics: Used to monitor the ice or protect it from rapid erosion.

Example: Special robots send precise data to scientists to determine how to reduce pollution and global warming.

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Dear student, as you have seen, smart systems are not just advanced inventions, but effective tools that help protect our planet from dangers. By using the Internet of Things, Artificial Intelligence, and Robotics, we can create a better future and preserve the environment for future generations.

Activity:

Dear student, propose ideas on how interconnected smart systems can be employed to help address environmental problems.

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Questions and Exercises on Lesson One

Q.1: Choose the correct answer from the following options:

1. Which of the following technologies allows devices to connect to the internet and exchange data?
    a) AI
    b) Robotics
    c) IoT
    d) VR
2. What is the main function of Artificial Intelligence (AI)?
    a) Transferring data only.
    b) *Analyzing data and making decisions.
    c) Manufacturing devices.
    d) Operating the internet.
3. What is the name given to systems that combine IoT, AI, and Robotics?
    a) Traditional Systems.
    b) Manual Systems.
    c) Mechanical Systems.
    d) *Interconnected Smart Systems.
4. How does IoT help in a smart home?
    a) By turning off all devices.
    b) By repairing broken devices.
    c) By connecting devices to the internet for control.
    d) By operating devices manually.
5. Why is Artificial Intelligence important in smart systems?
    a) Because it analyzes data and makes smart decisions.
    b) Because it manufactures devices.
    c) Because it repairs broken devices.
    d) Because it provides free internet.
6. How can robots help in agriculture?
    a) By selling crops.
    b) By watering plants automatically.
    c) By stopping the farmer.
    d) By storing water only.

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7. What is the main role of sensors in IoT?
    a) Sending text messages.
    b) Operating devices manually.
    c) Collecting and transmitting data.
    d) Repairing networks.
8. How can smart systems help reduce pollution?
    a) By increasing car emissions.
    b) By ignoring the problem.
    c) By shutting down all factories.
    d) By monitoring air quality and suggesting solutions.
9. If a car is equipped with IoT and AI, what can it do when a malfunction occurs?
    a) Send a message to the maintenance center with the location.
    b) Shut down without informing the driver.
    c) Wait until the driver discovers the malfunction.
    d) Shut down all systems.
10. How can AI help manage energy in a smart home?
    a) By operating devices randomly.
    b) By analyzing usage patterns and saving energy.
    c) By completely turning off the electricity.
    d) By increasing energy consumption.
11. If the soil is dry, how can smart systems in agriculture act?
    a) Ignore the problem.
    b) Reduce the amount of water further.
    c) Send a message to the farmer without taking any action.
    d) Water the soil automatically.
12. How can robots help in flood situations?
    a) By increasing the water level.
    b) By closing all roads without reason.
    c) By draining water or rescuing people.
    d) By ignoring warnings.
13. What action can AI take upon detecting high air pollution?
    a) Ignore the data.
    b) Send warnings to residents and reduce factory emissions.
    c) Intentionally increase pollution.
    d) Shut down all devices.

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14. What is the main difference between IoT and AI?

a) AI connects to the internet, while IoT analyzes data.

b) IoT makes robots, while AI repairs them.

c) IoT connects to the internet, while AI analyzes data.

d) There is no difference between them.

15. Why are robots an important part of smart systems?

a) Because they completely replace humans.

b) Because they perform mechanical or motor tasks based on AI decisions.

c) Because they work without any internet connection.

d) Because they only perform analysis.

16. How can smart systems help combat melting ice?

a) By increasing the temperature.

b) By melting the ice faster.

c) By ignoring the problem.

d) By monitoring the melting rate and suggesting solutions.

17. What is a potential drawback of smart systems relying entirely on IoT?

a) Reduced device efficiency.

b) Increased internet speed.

c) Inability to make decisions without AI.

d) No need for robots.

18. How can AI improve the efficiency of self-driving cars?

a) By increasing fuel consumption.

b) By analyzing traffic and making safe decisions.

c) By stopping the car suddenly.

d) By ignoring traffic signals.

19. If you wanted to design a smart system to reduce water consumption at school, what components would you need?

a) IoT to monitor water consumption, AI to analyze data, and robots to automatically close taps.

b) Air conditioning units only.

c) A smartphone without an internet connection.

d) A regular lighting system.

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20. How can robots be integrated into education using smart systems?

a) By completely replacing teachers.

b) By ignoring students' needs.

c) By stopping all educational activities.

d) By helping students solve questions and providing interactive explanations.

21. What is the proposed smart solution to face the problem of drought in agriculture?

a) Using IoT to measure soil moisture, AI to calculate the required amount of water, and robots for automatic irrigation.

b) Increasing water irrigation without analysis.

c) Stopping agriculture altogether.

d) Relying on rain only.

22. How can a regular hospital be transformed into a smart hospital using smart systems?

a) By removing all medical devices.

b) By stopping all medical services.

c) By connecting medical devices with IoT, using AI to diagnose patients, and robots to assist in operations.

d) By relying on staff only.

23. What is a smart solution to reduce traffic congestion in big cities?

a) Increasing the number of cars.

b) Using IoT to monitor traffic, AI to analyze data and direct cars, and robots to manage traffic signals.

c) Closing all roads.

d) Ignoring the problem.

24. What is the main drawback of using robots in elderly care?

a) Inability to provide emotional support like humans.

b) Increased efficiency.

c) Saving time.

d) Reducing costs.

25. How can the impact of smart systems on the environment be assessed?

a) As being useless.

b) As helping to monitor pollution and propose sustainable solutions.

c) As increasing pollution.

d) As being only expensive.

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26. What is one potential negative of self-driving cars?

a) Their complete reliance on AI could lead to errors if the system fails.

b) Their energy savings.

c) Their improvement of road safety.

d) Their reduction of accidents.

27. How can the role of AI in education be evaluated?

a) As completely replacing teachers.

b) As being useless.

c) As reducing student interaction.

d) As an assistive tool to enhance the learning experience and provide personalized explanations.

28. If you were asked to design a robot to help the elderly, what features would you include?

a) Ability to remind them of medication times and call for help in emergencies.

b) Ability to clean only.

c) Ability to play only.

d) Not communicating with them.

29. How can an early warning system for natural disasters be developed using smart systems?

a) By ignoring the data.

b) By waiting until the disaster occurs.

c) By shutting down all systems.

d) By connecting sensors to IoT, using AI to predict disasters, and sending warnings via robots.

30. What is an innovative function for using robots in public parks?

a) Planting and trimming trees, and cleaning the parks automatically.

b) Neglecting plants.

c) Increasing litter.

d) Not caring for visitors.

31. How can energy efficiency in cities be improved using smart systems?

a) By increasing consumption.

b) By completely turning off the electricity.

c) By using IoT to monitor consumption, AI to analyze data, and robots to adjust devices automatically.

d) By ignoring the problem.

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32. What are innovative solutions to reduce waste in homes?

a) Increasing waste.

b) Using robots to sort waste automatically, IoT to monitor quantities, and AI to suggest recycling methods.

c) Throwing waste in the streets.

d) Not caring.

33. What is the common factor between IoT, AI, and Robotics in smart systems?

a) They all work separately without connection.

b) There is no common factor.

c) They are limited to large industries only.

d) They integrate to create smart systems capable of connection, analysis, and execution.

34. What is the biggest challenge in implementing smart systems on a large scale?

a) High cost and maintenance needs.

b) Increased speed.

c) Reduced efficiency.

d) Not being needed.

35. How can smart systems improve the quality of life in cities?

a) By increasing pollution.

b) By stopping all services.

c) By improving services such as transportation, health, and energy management.

d) By ignoring the needs of the population.

36. What is the evidence that smart systems are successful in agriculture?

a) Improved crops and reduced waste through smart irrigation and precise monitoring.

b) Increased water waste.

c) Neglect of farms.

d) No results.

37. What is the most balanced opinion on the future of smart systems?

a) They will completely replace humans in all fields.

b) They will be assistive tools to improve life, with the need for ethical controls.

c) They will be completely useless.

d) They will only increase problems.

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Self-Assessment

Go back to the objectives at the beginning of the lesson and put a checkmark (√) in the appropriate box for "I can..."

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Lesson Two
Advanced Cyber Threats

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Objectives:

Place a (√) mark in the "...appropriate box for

At the end of the lesson, I will be able to	Good	Very Good	Need more effort
- Explain advanced fraudulent threats.			
- List the largest possible number of ideas to counter advanced cyber threats.			
- Propose a plan to counter distributed denial of service attacks.			

Let's Interact Together:

What do you know about the concept of social engineering in the internet world?

Let's Learn:

Dear student, in past years we have studied how to protect personal data. We talked about how to choose your passwords and the need to update antivirus software to prevent hackers from stealing your personal data. In this lesson, we will cover one of the advanced methods that hackers use to steal your data.

Advanced Cyber Threats:

Imagine there are very professional thieves, who are hackers, using sophisticated methods to harm us or steal our information. These methods are called advanced cyber threats. They are like those professional thieves, and these advanced cyber threats are not limited to simple viruses, but are carefully planned attacks based on exploiting specific weaknesses that may be in the systems, the devices used, or even in our behavior as users.

Example: A thief trying to break into your house will not just try to break the main door, but will watch the house to know when you leave, try to enter through the back window, or even pretend to be a repairman to enter the house. This is what hackers try to do in the digital world. In previous years, various hacking methods such as ransomware were discussed.

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Types of Ransomware and How It Works:

Imagine someone managed to break into your house, lock it, and tell you that you can't open it unless you pay them a sum of money. This is what ransomware does!

Ransomware: is a type of malicious software that encrypts your files (making them unreadable) or locks your devices and asks you to pay a sum of money (a ransom) to regain access to them.

How does it work? This software often spreads through suspicious emails, malicious websites, a malicious link, or even by downloading a program from an untrusted site. Once it enters your device, it starts encrypting your files quickly, and a message appears demanding a ransom.

Activity:

Dear student, in collaboration with your classmates, discuss why ransomware is considered a serious threat. What are the ways we can protect ourselves and our devices from it?

The Concept of Advanced Social Engineering and Its Methods:

Social engineering is not hacking devices or software, but hacking minds. It is the art of deceiving people into revealing confidential information or performing actions that compromise their security.

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Advanced Social Engineering Methods:

Spear Phishing: This is an advanced type of phishing that targets specific individuals or organizations with email or text messages that seem very personal and convincing. The attacker relies on gathering detailed data about you, such as your name and some information about you from social media and company websites, to make you trust them.

Pretexting: The attacker creates a fictitious story or scenario to deceive the victim into providing information or performing a certain action. They might pretend to be a technical support employee or an official at a bank.

Baiting: The attacker offers something attractive to the victim, like a free USB drive containing malicious software, to lure them into clicking on it or using it.

Activity:

Dear student, in collaboration with your classmates, think of examples of fraudulent messages or calls that you or one of your classmates may have received. How can you distinguish between a real and a fake message?

Distributed Denial of Service (DDoS) Attacks:

Imagine there is a popular website that many people like to use. Suddenly, a very large number of people, under the command of an attacker, try to access this site at the same time to stop it from working. The site becomes very crowded and cannot receive or provide services to visitors, thus it stops working. This is like completely stopping traffic on a street and making it so crowded with cars that it becomes impossible for anyone to pass.

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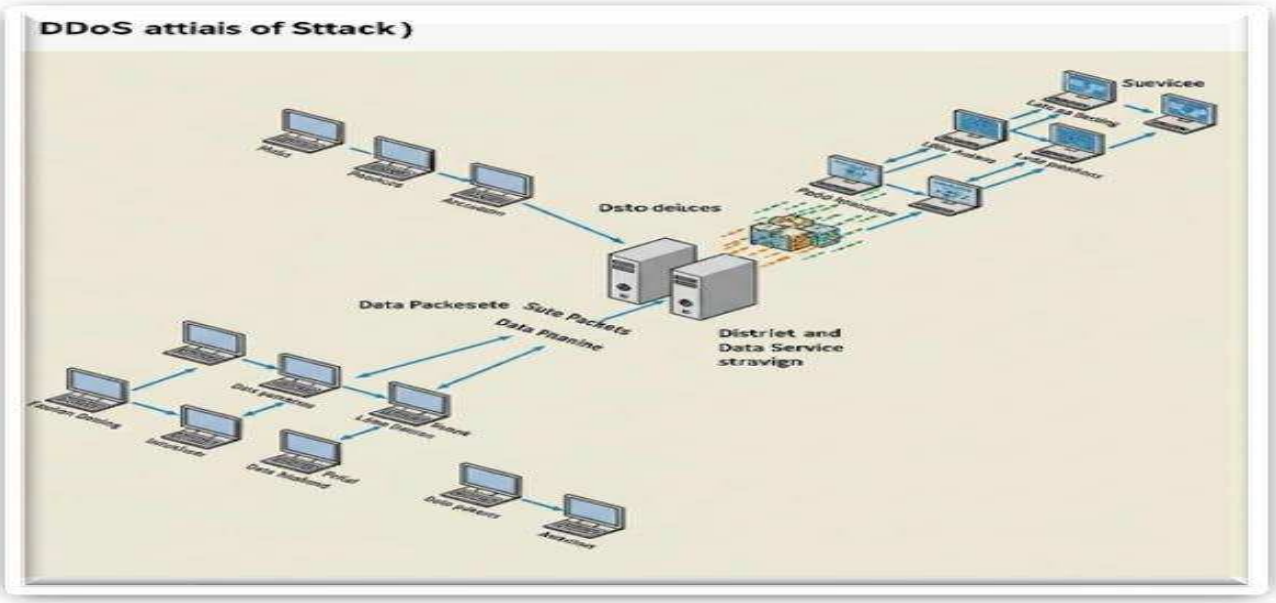
This is what happens in Distributed Denial of Service (DDoS) attacks, where the attacker uses many compromised devices (called botnets) to send huge amounts of requests to a website's server or an online service, which leads to slowing it down or disabling it and preventing legitimate users from accessing it.



Activity:

Dear student, in collaboration with your classmates, draw a simple diagram showing how a DDoS attack occurs.

Activity:

Dear student, in collaboration with your classmates, discuss the negative effects that DDoS attacks can have on companies and users.

Dear student, always remember to be careful and smart when dealing with the internet. You are the first line of defense in protecting your digital world!

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Questions and Exercises on Lesson Two

First: Choose the correct answer from the following options:

1. Which of the following is an example of Ransomware?
   a) A program that displays annoying ads.
   b) A program that encrypts your files and demands a ransom to decrypt them.
   c) A program that cleans temporary files from your device.
   d) A program that helps you organize your files.
2. What is the primary goal of Distributed Denial of Service (DDoS) attacks?
   a) Stealing user data.
   b) Disabling a website or online service.
   c) Spreading false information.
   d) Spying on user communications.
3. Which of the following methods is considered a social engineering technique?
   a) Using password cracking software.
   b) Tricking people into revealing their information.
   c) Sending viruses via email.
   d) Exploiting vulnerabilities in software.
4. What does the term "security updates" mean?
   a) Changing the appearance of the operating system.
   b) Adding new features to programs.
   c) Fixing security vulnerabilities in software and hardware.
   d) Speeding up applications.
5. What are the "Botnets" used in DDoS attacks?
   a) Advanced artificial intelligence programs.
   b) A network of compromised devices controlled remotely.
   c) Super-fast computers.
   d) A group of secure servers.

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Second: Mark (√) for the correct statement and (×) for the incorrect statement:

1. Ransomware permanently damages your device. ( )
2. Distributed Denial of Service (DDoS) attacks target only one device. ( )
3. Social engineering relies on exploiting weaknesses in technical systems. ( )
4. Sharing your personal information with anyone you trust on the internet is always safe. ( )

Third: Fill in the blanks:

1. An …… program helps detect and remove malicious software from your device.
2. Trying to steal your personal information through fake emails is called …….
3. ……. programs encrypt your files and demand a ransom to recover them.
4. ……. attacks aim to disable a website or online service by sending huge amounts of requests.
5. The art of deceiving people to obtain confidential information is called **…….**
6. In DDoS attacks, a network of compromised devices called a ……
7. ……. is considered an advanced type of phishing that targets specific individuals.

Self-Assessment

Go back to the objectives at the beginning of the lesson and put a checkmark (√) in the appropriate box for "I can..."

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Lesson (3)
Big Data

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Objectives:

Place a (√) mark in the "...appropriate box for

At the end of the lesson, I will be able to	Good	Very Good	Need more effort
1- Explain the characteristics of big data.			
2- Discuss secure big data sources.			
3- Draw up the types of big data.			

To interact with:

What is big data? How can we securely obtain data that helps us make appropriate decisions?

Let's learn

Concept of Big Data:

A collection of large and complex data that cannot be efficiently processed using traditional technology to achieve its benefits (such as Excel). Analyzing big data allows analysts, researchers, and entrepreneurs to make better and faster decisions.

Sources of Big Data:

1- Internet of Things (IoT) devices:

Connected devices such as smart refrigerators, smartwatches, or connected cars constantly generate data by collecting information about their location, temperature, behavioral patterns, and energy usage.

Example: A smartwatch measures heart rate, physical activity level, and temperature, and collects this data to send it to the relevant application.

2- Social Media:

Social media generates data through users' daily activities such as posts, comments, photos, videos, and likes. (These sources may be unreliable).

Example: When someone posts a photo on Instagram or shares an opinion on Facebook, data is generated about the time, location, reactions, and hashtags.

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3- Financial Data:

Electronic payments, banking transactions, and stock trading operations contribute to generating huge amounts of data by collecting information about paid amounts, users, locations, and time.

Example: When a person makes an online purchase using a credit card, data is recorded about the amount, the store, and the geographical location.

4- Data from Smart Devices:

Devices such as mobile phones, cameras, and smart home devices generate data about usage, location, and interactions.

Example: A mobile phone continuously tracks your geographical location and collects data about places you've visited and applications you've used.

5- Digital Content:

Videos, photos, and audio content uploaded or viewed online generate large data such as number of views, interactions, comments, and shares.

Example: When someone watches a video on YouTube, data is collected about the viewing duration, interaction with the video, and comments.

6- Government Data:

Governments generate data through population records, statistics, tax data, and census.

Example: Data is collected about the population count in a specific area or information about income and expenses through government surveys.

7- Geographical and Spatial Data:

Satellites and GPS devices collect data about geographical locations, roads, and the environment.

Example: Mapping applications like Google Maps collect data about traffic, car speed, and congested roads to improve navigation.

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Five Characteristics of Big Data (5Vs):

1- Volume:

Refers to the enormous amount of data collected and stored. With technological advancements, we have a greater ability to collect data from multiple sources such as smart devices, social media, and others.

2- Velocity:

Refers to the speed at which data is produced and processed. In the internet age, data is produced at a high speed, such as electronic payments, social media updates, and data flow from connected devices.

3- Variety:

Refers to the diversity of data types collected, including structured data (such as databases) and unstructured data (such as texts, images, and videos).

4- Veracity:

Refers to the reliability and quality of data. Sometimes, data may be inaccurate or contain errors, making it difficult to extract accurate information from it.

5- Value:

Refers to the benefit that can be extracted from data. It is essential to extract and analyze data in a way that achieves real value for the organization or individuals.

Types of Big Data:

- Structured Data:

Is data that is organized and arranged in tables with rows and columns, like traditional databases.

Examples: Customer data, financial data, transaction records.

- Unstructured Data:

Is data that does not come in an organized form such as tables or databases. This type of data is difficult to analyze using traditional tools.

Sources: Texts, images, videos, social media posts.

Example: A Facebook post containing texts, images, and videos.

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- Semi-Structured Data:

Semi-structured data is a mix of structured and unstructured data. Email messages are a good example because they include unstructured data in the message body, in addition to more structured properties such as sender, recipient, subject, and date.

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Questions and Exercises for Lesson Three:

Q.1: Mark (√) next to the correct statement and (x) next to the incorrect statement:

1. Big data can be easily processed using Excel. ( )
2. Big data analytics allows analysts, researchers, and entrepreneurs to make better and faster decisions. ( )
3. Connected devices are considered a source of big data. ( )
4. All data obtained through social media is documented. ( )
5. Financial data is not considered big data. ( )
6. When making an online purchase using a credit card, data is recorded about the amount, the store, and the geographical location. ( )
7. Smartphones do not contribute to generating big data. ( )
8. A mobile phone continuously tracks your geographical location and collects data about places you've visited and applications you've used. ( )
9. Digital content such as videos generates big data. ( )
10. Videos, photos, and audio content uploaded or viewed online do not generate large data. ( )
11. Governments generate data through population records, statistics, tax data, and census. ( )
12. Satellites and GPS devices collect data about geographical locations, roads, and the environment from the characteristics of big data "Volume" and "Value". ( )
13. The speed of data production is not among the characteristics of big data. ( )
14. The diversity of data types includes structured data (such as databases) and unstructured data (such as texts, images, and videos). ( )
15. Veracity refers to the reliability and quality of data. ( )
16. Structured data is data that comes in an unorganized form such as customer data and financial data. ( )

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17. Unstructured data is data that does not come in an organized form such as tables or databases. ( )

18. Semi-structured data is a mix of structured and unstructured data. ( )

19. Email messages are a good example of structured data. ( )

Self-assessment:

Refer to the objectives at the beginning of the lesson, and mark (√) in the appropriate box for (I can....)

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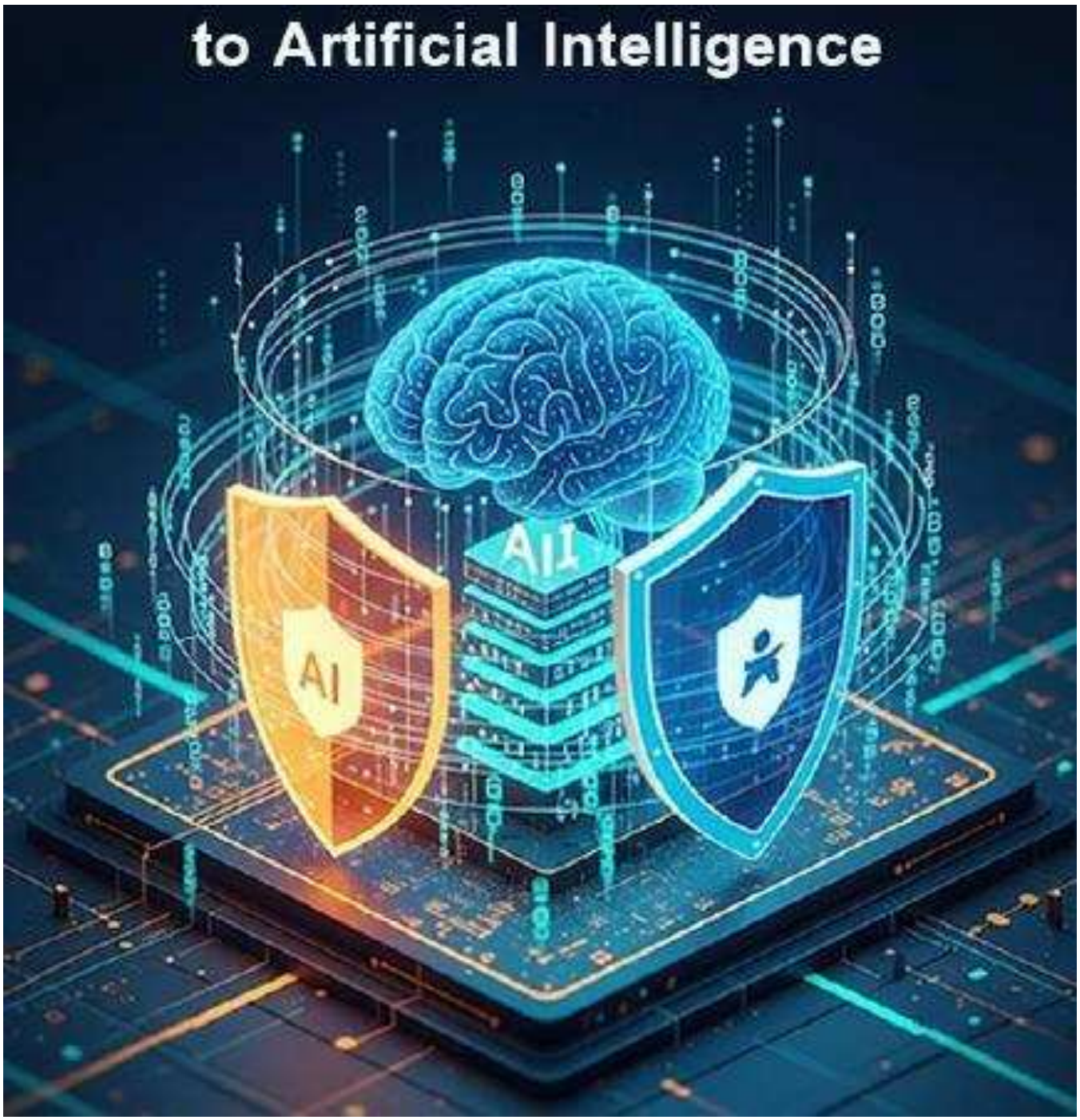
Lesson Four:
Big Data and Its Relationship to Artificial Intelligence



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Objectives:

Place a (√) mark in the "...appropriate box for

At the end of the lesson, I will be able to	Good	Very Good	Need more effort
1- Discuss the stages of big data processing.			
2- Explain the uses of big data.			
3- Give as many examples as possible of how artificial intelligence relies on big data.			

Let's interact:

How does Artificial Intelligence rely on Big Data?

Let's learn:

Big data plays a vital and fundamental role in the development and effectiveness of artificial intelligence; AI needs big data to function and learn, while AI technologies help process and analyze this massive amount of data and extract value from it.

First: Stages of Big Data Processing:

1- Big Data Collection:

It is the process of collecting huge amounts of data from the previously mentioned sources.

2- Data Storage:

Once collected, data is stored in massive databases, which can be on servers or cloud systems.

3- Data Cleaning:

Collected data may contain errors, duplicates, or incorrect data. Therefore, it must be cleaned and its accuracy ensured.

4- Data Analysis:

After data storage and cleaning, data analysis comes into play using advanced tools and techniques such as artificial intelligence and machine learning.

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5- Information Extraction:

After data analysis, valuable information is extracted that can be used to improve operations or make strategic decisions.

Second: Uses of Big Data:

1- Artificial Intelligence (AI):

It is the branch of information systems science that enables the creation and design of algorithms that simulate human intelligence methods so that computers can perform some tasks instead of humans, such as pattern recognition, speech, hearing, movement, and logical thinking.

2- Machine Learning and Deep Learning:

Big data is used to train models that can improve their performance over time. The better the quality, size, and diversity of available data, the greater the ability of these models to learn and provide accurate predictions and decisions. For example, machine learning is used to predict future events such as weather.

3- Network Monitoring and Cybersecurity:

Big data is used to monitor network traffic and analyze patterns to detect security threats and protect systems from attacks.

4- E-commerce:

E-commerce platforms rely on big data to understand customer behavior, improve recommendations, adjust prices, and achieve higher sales using advanced analytics.

Third: The Role of Big Data in Artificial Intelligence:

A- Improving Accuracy and Performance:

Big data allows models to be trained on a wide range of scenarios and conditions, which improves their ability to generalize and reduces the problem of "overfitting," thereby increasing their accuracy and effectiveness in the real world.

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B- Enabling Advanced AI Applications:

1- Natural Language Processing (NLP):

Natural language processing models, such as large language models like GPT, require very large text datasets to learn to accurately understand and generate human language.

2- Computer Vision:

Computer vision applications, such as facial recognition and object detection, rely on massive datasets of images and videos to train their models.

3- Predictive Analytics:

Big data enables AI to analyze massive amounts of historical data to identify patterns and trends, allowing for accurate predictions about future events, such as customer behavior or market trends.

4- Discovering Hidden Insights and Patterns:

Thanks to AI's ability to process and analyze big data, companies and organizations can discover valuable insights and hidden patterns that are difficult for traditional tools to identify. These insights can lead to innovative strategic decisions.

Example: In healthcare, big data from medical records can be analyzed to identify patterns that help diagnose diseases and develop personalized treatment plans.

5- Continuous Learning and Adaptation:

Real-time big data streams allow AI models to continuously learn and adapt to new data, improving their performance over time based on incoming information.

6- Improving User Experience and Task Automation:

AI uses big data to understand customer interactions with products and services, enabling it to provide personalized recommendations and content tailored to their interests.

Big data also helps machine learning algorithms recognize patterns and make decisions without human intervention, leading to task automation in areas such as customer service, logistics, and finance.

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Dear student... Big data is the raw material that artificial intelligence feeds on. Without it, AI would be just a set of theoretical algorithms incapable of learning or providing real value. In contrast, AI helps transform this raw data into strategic information that aids in informed decision-making and gaining a competitive advantage.

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Questions and Exercises for Lesson Four:

Q.1: Mark (√) next to the correct statement and (x) next to the incorrect statement:

1. Big data has no role in the development and effectiveness of artificial intelligence. ( )
2. AI technologies help process and analyze big data. ( )
3. Data cleaning is one of the stages of big data processing. ( )
4. The data collection stage is the process of collecting huge amounts of data from various sources. ( )
5. Big data processing does not require storing that data. ( )
6. Data cleaning refers to dealing with errors, duplicates, or incorrect data. ( )
7. Data analysis using advanced tools and techniques such as artificial intelligence. ( )
8. Information extraction occurs before data analysis. ( )
9. Machine learning and deep learning do not need big data. ( )
10. Big data is used to monitor networks and cybersecurity. ( )
11. E-commerce platforms rely on big data to understand customer behavior. ( )
12. Big data does not allow models to be trained on a wide range of scenarios and conditions. ( )
13. Computer vision applications, such as facial recognition and object detection, do not require massive datasets of images and videos to train their models. ( )
14. The role of big data in artificial intelligence is to improve accuracy and performance and enable AI applications. ( )
15. Predictive analytics and Computer Vision are advanced AI applications. ( )
16. AI does not use big data to understand customer interactions with products and services. ( )
17. Big data helps machine learning algorithms recognize patterns and make decisions without human intervention. ( )
18. Due to big data, task automation processes improve in areas such as customer service, logistics, and finance. ( )

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19. Big data is not the raw material that artificial intelligence feeds on. ( )

20. Artificial intelligence is just a set of theoretical algorithms capable of learning or providing real value without big data. ( )

Self-assessment:

Refer to the objectives at the beginning of the lesson, and mark (√) in the appropriate box for (I can....)

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Unit Two
Website Design and Creation Lesson One

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Lesson one

Principles of Designing Attractive, Professional Website Interfaces

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Objectives:

Place a (√) mark in the "...appropriate box for

At the end of the lesson, I will be able to	Good	Very Good	Need more effort
4- Explain some concepts related to website design (User Interface design, User Experience).			
5- List the largest number of ideas for websites with good UX/UI design.			
6- Apply some basic UX/UI principles in simple in-class activities.			

Let's Interact:

From your experience browsing websites, what are the things that make a site easy for you to use?

Let's Learn:

Dear student, in this lesson, you will learn about the design of the websites and applications you use daily, the quality of the services they provide, and why you feel comfortable using some while feeling uncomfortable or annoyed when using others.

First: The Concept of User Experience (UX) Design

Imagine you are designing a new educational website or game. You must think about every step the player will take and how they will feel while playing. Is the game easy to understand? Are the commands clear? Will the player enjoy the time they spend? This is what we call User Experience (UX) design.

1. User Experience (UX) Design:

It is the process of thinking about how people will use an application or website. Can they find what they need easily? Do they feel happy while using it?

Example: Imagine you want to find a book in a large library. If the books are arranged in an organized manner, it will be easy and convenient. But if the books are thrown about randomly, you will feel frustrated.

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Books thrown about randomly	Books arranged in an organized manner

2. <u>The Importance of User Experience (UX) Design</u>:

If an application or website is easy to use, the user will feel satisfied and will return to use it again. If it is difficult, they might leave it forever.

<u>Activity</u>: Dear student, with the help of your teacher and in collaboration with your classmates, name a website or application you use. Describe what makes the site or application easy or difficult to use.

Reasons for the ease of the site or application	Reasons for the difficulty of the site or application
……	……
……	……
……	……

<u>Activity</u>: Dear student, with the help of your teacher and in cooperation with your colleagues, discuss the basic principles that must be available and considered to facilitate the user's interaction with the website or application.

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Basic principles to consider in UX design

Ease of Navigation:

•Ease of navigation means the user can reach what they are looking for quickly and without trouble.

•Illustrated Examples:

•A main menu with clear buttons likes "Home," "Books," "Contact." This menu is easy because the options are clear and organized.	
	•A nested menu with many sub-items. This menu is disorganized and confusing because the options are numerous and unclear.

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Activity:

Dear student, with the help of your teacher and in collaboration with your classmates, draw a simple navigation menu for an application or website from your imagination.

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.....

.....

2- Clarity:

•Interface clarity means presenting information in a way that is easy to understand.

•Illustrated Examples:

•Ministry of Education

Text in a large, clear font that is easy to read.	
Text in a small, decorative font. Difficult to read and may cause frustration.	

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Activity:

Write the short sentence "Water is the secret of life" using a clear font and then a complex font, and compare them.

.....

.....

.....

3. Consistency:

•Interface consistency means maintaining the same style throughout the application or website.

•Illustrated Examples:

The buttons look familiar to the user, with the same shape and color everywhere.	
The buttons confuse the user because they are inconsistent, with different shapes and colors.	

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Activity:

Using drawing tools, design two buttons with the same shape and color to illustrate the importance of consistency.

....

....

....

Activity:

Dear student, with the help of your teacher and in collaboration with your classmates, name an application or website you prefer in terms of design and attractiveness.

....

....

....

Second - The Concept of User Interface (UI) Design1.

1-What is User Interface (UI) Design?

User Interface (UI) design is the visual appearance of a website, application, or game, such as:

- Are the colors beautiful? Are the buttons clear? Are the fonts easy to read? All these elements form the user interface that the user sees and interacts with in an attractive, organized, and easy-to-understand way.
- **Example:** Imagine if the buttons of an application were so small that you couldn't press them easily. This indicates a problem in the UI design

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a problem in the UI design	

2. The Importance of UI:

•**Visual Appeal:** A beautiful interface gives a good first impression. This is represented by a simplified image of one eye looking with admiration at a beautiful design and another eye looking with displeasure at a disorganized and ugly design. "If the interface is not visually attractive, users will not like it."

Activity:

Dear student, with the help of your teacher and in collaboration with your classmates, discuss the basic principles that must be available and considered when designing the user interface for a website or application.

.....

.....

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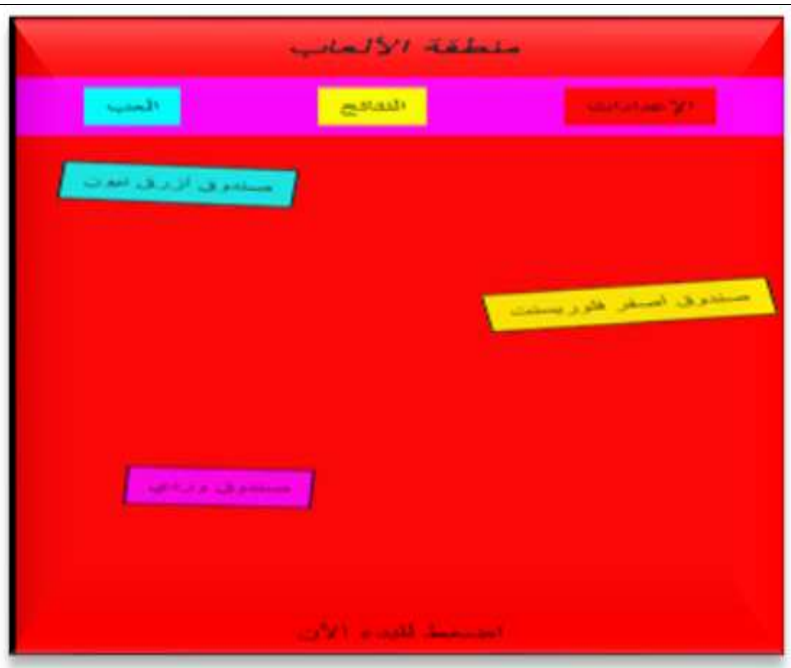
Basic Principles in User Interface (UI) Design1.

1- Colors:

•Choosing the right colors affects the user's mood.

•Illustrated Examples:

A consistent color scheme like blue and gray. The colors look calm and comfortable.	
Loud colors like red, yellow, and purple. The colors are annoying and distracting.	

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Activity:

Dear student, with the help of your teacher and in collaboration with your classmates, choose three harmonious colors to design an imaginary interface.

.....

.....

.....

2. Fonts:

•Interface fonts should be readable and appropriate for the context.

•Illustrated Examples:

A simple and clear font. Description: "This font is easy to read and looks professional."	
A complex and decorative font. Description: "This font is difficult to read and not suitable for practical applications."	

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Activity:

Dear student, with the help of your teacher and in collaboration with your classmates, choose three font names suitable for an educational application.

.....

.....

.....

3. Layout:

•Organizing the interface elements logically makes the application or website easy to use.

•Illustrated Examples:

A page divided into clear sections like "Home," "News," "Articles." Description: This page is organized and easy to browse.	
	A page full of crowded, overlapping elements that causes a headache.

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Activity:

Dear student, with the help of your teacher and in collaboration with your classmates, draw on a piece of paper and design a page divided into three main sections in an organized way.

....

....

....

From the above, you can define the following terms:

•User Experience (UX): The design that makes using a website or application easy and comfortable.

•User Interface (UI): The design that makes an application beautiful and attractive.

•Example: When you enter a restaurant for lunch, the restaurant's decor, colors, and facade that attract your attention are the (UI). The quality of the food and the service provided by the restaurant is the (UX).

4. Practical Examples

1. Examples of Good Websites:

•Google: Simple and easy to use; you can find what you need.

•YouTube: Features an attractive and easy-to-navigate design.

•Notice how interfaces have become easier and more beautiful over time.

Practical Activity:

•Form small groups of students and discuss a website or application they use daily. Ask them:

•What things make the site or application easy and enjoyable to use?

•What things could be improved from a design perspective?

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Questions and Exercises for Lesson One

Q.1: Choose the correct answer from the following options:

1.What is the primary focus of User Experience (UX) design?

a) The visual appeal of the design.

b) The ease of use and effectiveness of the product.

c) The colors and fonts used in the design.

d) The loading speed of the website.

2.What is the primary focus of User Interface (UI) design?

a) Ease of navigation in the application.

b) User satisfaction with the product.

c) The attractive and visual appearance of the product.

d) Organizing information logically.

3.Which of the following is a fundamental principle of User Experience (UX) design?

a) Using decorative fonts to attract attention.

b) Providing clear and easy navigation for the user.

c) Using as many colors as possible.

d) Putting a lot of information on a single page.

4.Which of the following is a fundamental principle of User Interface (UI) design?

a) Making all buttons the same size and shape.

b) Choosing harmonious and eye-pleasing colors.

c) Providing multiple ways to accomplish the same task.

d) Ensuring that the text is unreadable.

5.What does the principle of consistency mean in UX/UI design?

a) Using different elements on each page to make it unique.

b) Maintaining a uniform style for elements throughout the product.

c) Changing the site's design frequently to keep users interested.

d) Using random fonts and colors.

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6.Why is usability important in UX design?

a) To make the design look more professional.

b) To increase user satisfaction and engagement with the product.

c) To reduce the cost of product development.

d) To make the product run faster.

7.Why is visual appeal important in UI design?

a) To make the product easy to use.

b) To leave a good first impression on the user.

c) To organize information better.

d) To make the product compatible with all devices.

8.Which of the following examples illustrates confusing navigation design?

a) A main menu with clear buttons.

b) A search bar in a prominent location.

c) A menu with nested and disorganized items.

d) Clear links at the bottom of the page.

9.Which of the following examples illustrates the use of inconsistent colors in UI design?

a) Using simple color gradients.

b) Using complementary colors from the color wheel.

c) Using many loud and different colors randomly.

d) Using white as a primary color with a calm secondary color.

Q.2: Mark (✓) for correct statements and (✗) for incorrect statements:

1.User Experience (UX) design focuses primarily on the product's appearance, not how it is used. ( )

2.User Interface (UI) design is concerned with making the product easy to use and effective. ( )

3.One of the principles of UX design is to provide clear and easy navigation for the user. ( )

4.Using many decorative fonts improves the clarity of text in (UI) design. ( )

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5.Consistency in design means using the same style for elements throughout the product. ( )

6.Usability does not affect user satisfaction with a digital product. ( )

7.The visual appeal of the user interface can affect the user's first impression. ( )

8.A main menu with clear buttons is an example of good navigation design. ( )

9.Using many different colors in an organized way improves the aesthetics of the design. ( )

Q.3: Complete the following sentences:

1.User Experience (UX) design primarily focuses on making the product's use ..... and easy.

2.User Interface (UI) design is primarily concerned with the ..... attractive appearance of the product.

3.A basic principle in UX design is providing clear ..... for the user to navigate between pages.

4.When choosing ..... for a user interface, they should be comfortable for the eye and easy to read.

5.Maintaining ..... in the design of elements like buttons and icons gives a sense of professionalism and consistency.

Q.4: Identify the scientific term:

1.A design process aimed at making the use of a digital product easy, useful, and enjoyable for the user. (.....)

2.The process of designing the visual elements of an application or website in an attractive, organized, and easy way. (.....)

Self-Assessment

Go back to the objectives at the beginning of the lesson and put a checkmark (✓) in the appropriate box for ("I can...").

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Lesson Two

Web Page Format

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Objectives:

Place a (√) mark in the "...appropriate box for

At the end of the lesson, I will be able to	Good	Very Good	Need more effort
1- Discuss Web page formatting (CSS)			
2- Write the basic CSS structure correctly.			
3- Enumerate benefits			

Let's interact together:

What is CSS? Explain.

Let's learn

In previous years, we studied HTML, which is a markup language used to create static internet pages displayed using web browsers.

HTML was designed to describe the content of a web page, and for web page formatting, tags like <font> and color attributes were added to HTML. This made developing large websites cumbersome and difficult, as font and color styles were added to every page, making formatting each web page a long and costly process.

To solve this problem, the World Wide Web Consortium (W3C) created CSS. There was no longer a need to apply formatting by adding tags within the HTML page.

Cascading Style Sheets (CSS)

We use CSS to format the appearance of web pages, such as font color, font size, and web page color. It saves a lot of effort, as it can control the formatting of many web pages simultaneously.

Benefits of CSS:

Time-saving: You can place the required styling code in a separate CSS file and include it in any number of HTML pages where you want to use it.

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Faster loading: When you place the styling code in a CSS file and include it in the site's pages, the browser downloads this file only once and stores it. Then, when you access any page linked to this file, the browser uses the previously stored version instead of downloading the file every time.

Easy to modify: By simply modifying the styling code in the CSS file, all linked web pages will have their styles automatically updated.

Improved aesthetic appearance: The page becomes more attractive and visually organized.

Improved readability: Choosing appropriate fonts and colors makes content easier to read.

Separation of design and styling from web page content: The look and feel of a web page and all other web pages can be changed by modifying a separate CSS file without needing to change the HTML structure of each page. When we want to change colors or fonts again, the CSS file is modified.

Building responsive and suitable pages: With CSS, you can make the screen design responsive to different screen sizes (computer - mobile - tablet - ...) through which pages are viewed, so they appear appropriately relative to the size of the open page.

Basic CSS Structure

The general syntax for CSS code is as follows:

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Selector: Represents an HTML element or a group of elements to which styles will be applied, such as "body".

Property: Specifies what you want to change (e.g., color, size, spacing...)

Value: Specifies how you want to change the property.

How to Add CSS to HTML Code?

There are three ways to include CSS styles:

1. **Inline CSS**: Applies styles directly to page elements.
2. **Internal CSS**: Used for styling individual pages.
3. **External CSS**: Preferred for large websites to unify design and styling of their pages.

In this lesson, we will cover:

- **External CSS.**
- **How to Write External CSS Code**

- CSS codes are written in a separate file with the ".CSS" extension.

- The CSS file is linked to the HTML page using the <link> tag within the <head> section.

- An external CSS file allows changing the appearance of all website pages by changing only one file!

- The external CSS file should not contain any HTML tags. The <link> tag is written inside the HTML file as follows:

<link href='fileName.css' rel='stylesheet'>

Where:

The href: attribute is the name and path of the CSS file.

The rel: attribute: Used within the <link> tag in HTML files to specify the relationship type between an HTML file and another external file - often this file is a CSS file.

rel="stylesheet": Tells the browser that the file referenced in the href attribute is a CSS file that should be loaded and applied to the page.

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Example: Creating an HTML file that calls a CSS file named my style stored in the same folder.

First: HTML file code

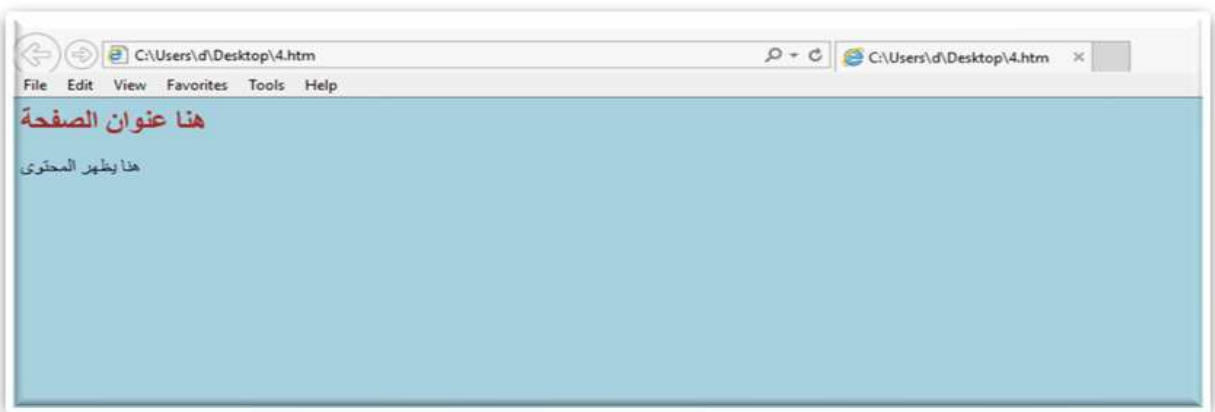
```
<html>
<head>
<link rel="stylesheet" href="mystyle.css">
</head>
<body>
<h1>Here is the page title</h1>
<p>Here the content appears</p>
</body>
</html>
```

Second: CSS file code

```
body {background-color: lightblue;}
h1 {color: brown; font-size: 24px;}
```

Dear student... note the following:

- The **body** element in the CSS file affects the body area in the HTML file and makes it appear in light blue.
- The **h1** element in the CSS file affects the main web page headings and makes them brown with a size of 24px.



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Activity

Dear student... based on your study of HTML in previous years,

- Create the two web pages shown below.
- Use external CSS code to create a unified style for the web pages.

Web page containing student data	Web page containing school data

Note:

- ✓ Notice the unified formatting of the two pages - how can this be achieved with the least amount of code writing?
- ✓ As we will see, we will write the code responsible for formatting the two pages once in a CSS file instead of repeating that code inside each HTML page.

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Questions and Exercises for Lesson Two

Q.1: Mark (✓) next to the correct statement and (✗) next to the incorrect statement.

1. HTML is used only to describe the appearance of web pages. ( )
2. CSS was created to facilitate web page styling and separate styling from content. ( )
3. One of the benefits of CSS is that it is used to design the page structure and content. ( )
4. An external CSS file can be used to style a large number of HTML pages at once. ( )
5. The <font> tag is still the preferred method for styling text in modern HTML pages. ( )
6. An external CSS file is included in HTML using the <link> tag. ( )
7. The browser downloads the external CSS file only once and then uses the cached version. ( )
8. The rel="stylesheet" attribute is used to link a CSS file to an HTML file. ( )
9. An external CSS file can contain HTML inside it. ( )
10. CSS can be used to change font size and color. ( )
11. Inline CSS styles are used to apply styles to entire website pages. ( )
12. Internal CSS is preferred for large websites to unify styling. ( )
13. CSS makes it easy to modify the appearance of all linked pages at once. ( )
14. Styling HTML elements using CSS makes the page more organized and attractive. ( )
15. In CSS code, the Selector specifies properties like "color" and "size". ( )
16. The body element in CSS can change the background of the entire page. ( )
17. Through CSS, it is not possible to make the design responsive to different screen sizes. ( )
18. Writing styling code inside each HTML page is more efficient than using external CSS. ( )
19. Separating styling from content helps speed up modification and update processes. ( )
20. When changing a style in an external CSS file, the appearance of linked pages is not affected. ( )

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Self-assessment

Refer to the objectives at the beginning of the lesson, and mark (✓) in the appropriate box for (I can....)

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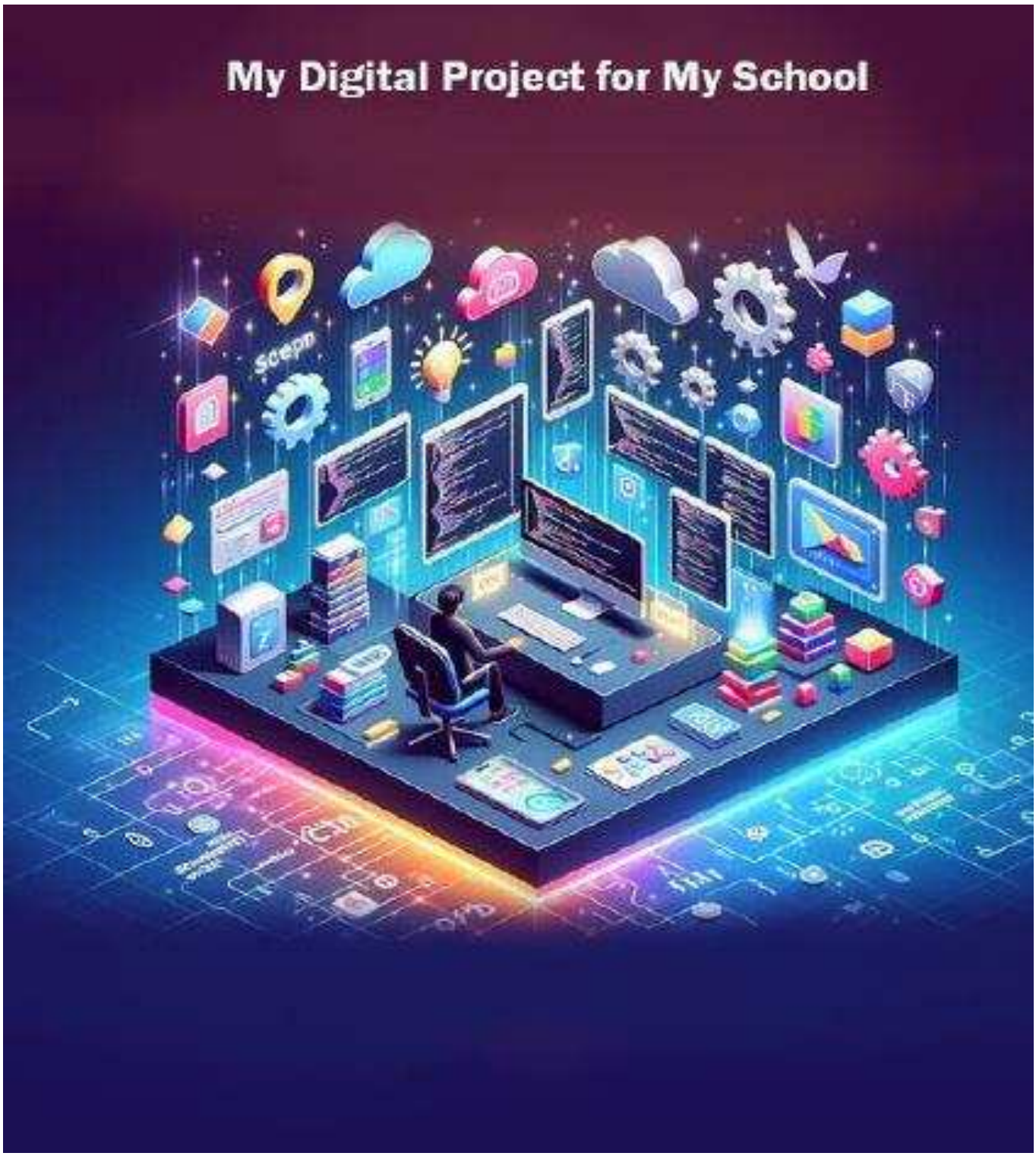
Lesson Three
My Digital Project for My School



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Objectives:

Place a (√) mark in the "...appropriate box for

At the end of the lesson, I will be able to	Good	Very Good	Need more effort
- Explain the idea of my digital project using HTML markup language.			
- Write my project codes correctly			
- Design my school page attractively.			

Let's interact together:

How can an attractive website be designed?

Let's learn

- ✓ Writing the necessary HTML code to design the two web pages
- ✓ And writing the necessary CSS code to style them

Steps

First: Prepare a folder with the necessary files to set up the pages

Activity

Dear student, with the help of your teacher and in cooperation with your classmates.

- Create a folder named "project"

- Inside the "project" folder, using a text editor, create the necessary files to implement the project, which are:

File	Type	Function
School.htm	HTML	Stores the HTML code for the school data page
Student.htm	HTML	Stores the HTML code for the student data page
Style.css	CSS	Stores the CSS code used to style both pages

Activity

Dear student, with the help of your teacher and in cooperation with your classmates, write the HTML code for designing the school data page inside the school.htm file and save it.

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HTML code for the school data page

```
<html>
<head>
<title>School Data</title>
<link rel="stylesheet" href="style.css">
</head>
<body>
<div class="container">
<header>
<h1>School [School Name] Preparatory</h1>
</header>
<section>
<h2>Basic Information</h2>
<img src='sc.jpg' width="300" height="200"> <br><br>
<br><br> School Name: Full School Name
<br><br> Address: Detailed School Address
<br><br> Phone Number: [School Phone Number]
Email: School Email
</section>
<section>
<h2>School Activities</h2>
<br><br> [Mention one or two of the available activities at the school] Mention another activity if any]
</section>
<section>
<h2>School Activities</h2>
<br><br> Mention one or two of the available activities at the school] Mention another activity if any]
</section>
<footer>
<p>School Data 2025 &copy;</p>
</div> </body>
</html>
</footer>
```


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Explanation of the HTML code for the school data page

<html>

This tag is the basic element that contains all the page content.

<head>

This part contains important information for the browser but does not appear within the page content itself, such as:

<title>

Specifies the title that appears in the browser tab (in this case: School Data).

<link rel="stylesheet" href="style.css">

Links the HTML file to an external CSS file named style.css so that it is used to style the pages.

<body>

Here the content that appears to the user is written.

** **

The **div** element is used as a container or section of the page to organize page content and can be used to group elements for purposes such as styling.

"Class-container" refers to a code within the CSS file used for styling the container and its contents.

<header>

Used to define the top part of the page or container that contains important information and usually contains the main title. Its use enhances page organization.

<h1>School [School Name] Preparatory</h1>

Places a main title for the page.

<section>

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The container is divided into two sections:

First: Represents a section within the container related to basic school information.

Second: Represents a section within the container for school activities.

<h2>Basic Information</h2>

Subtitle for the first section.

<h2>School Activities</h2>

Subtitle for the second section.

<footer>

Represents the bottom part of the page or container and usually contains copyright information or contact information.

Text paragraph displaying copyright and the © symbol represents the copyright symbol.

** **

Closing the div container.

</body>

Closing the body element.

</html>

Closing the html element.

Activity

Dear student, with the help of your teacher and in cooperation with your classmates, write the HTML code for designing the student data page inside the student.htm file and save it.

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HTML code for the student data page

```
<html> <head>
<title>Student Data</title>
<link rel='stylesheet' href="style.css">
</head>
<body>
<div class="container">
<header>
<h1>Student Data</h1>
</header>
<section>
<h2>Personal Information</h2>
<img src="st.jpg" width="300" height="200"><br><br>
<br> <br>Student Name: Full Student Name
<br> <br> Date of Birth: [Student's Date of Birth]
<br><br>Grade Level: Student's Grade Level Place of Residence: [Student's Place of Residence]
</section>
<section>
<h2>Contact Information</h2>
<br><br> Guardian's Phone Number: Guardian's Phone Number] Student's Email if any: Student's Email]
</section>
<footer>
<p>Student Data 2025 &copy;</p>
</footer>
</div>
</body>
</html>
```


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Explanation of the HTML code for the student data page

Activity

Dear student, with the help of your teacher and in cooperation with your classmates, complete the explanation of the following HTML code for designing the student data page.

<html>

…….

<head>

This part contains important information for the browser but does not appear within the page content itself, such as:

<title>

…….

<link rel="stylesheet" href="style.css">

Links the HTML file to an external CSS file named style.css, which is used to style the pages.

<body>

Here the content that appears to the user is written.

……..

"class "container" refers to a code within the CSS file used for styling the container and its contents.

<header>

Used to define the top part of the page or container that contains important information and usually contains the main title. Its use enhances page organization.

<h1>Student Data</h1>

…….

<section>

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The container is divided into two sections:

First: Represents a section within the container related to basic school information.

Second: Represents a section within the container for school activities.

<h2>Personal Information</h2>

…….

<h2>Contact Information</h2>

Subtitle for the second section.

<footer>

Represents the bottom part of the page or container and usually contains copyright information or contact information.

Student Data 2025 ©

** Student **

……..

** **

Closing the div container.

</body>

……

</html>

Closing the html element.

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Activity

Dear student, with the help of your teacher and in cooperation with your classmates, write the CSS code for styling the two web pages.

```
body {
text-align: center;
font-weight: bold;
}
```

```
.container {
width: 80%;
margin: auto;
background-color: lightcyan;
}
```

```
header {
padding: 10px;
color: white;
background-color: darkblue;
}
```

```
section {
padding: 15px;
}
```


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```
h2 {
padding-bottom: 10px;
color: blue;
border-bottom: 5px solid blue;
}
```

```
footer {
padding: 5px 0;
color: white;
background-color: black;
}
```

Explanation of the CSS code for styling the two web pages

body

This part controls the appearance of the entire page.

text-align: center; Centers the text on the page.

font-weight: bold; Makes the text bold.

container

This part of the styling code controls the styling of the div container.

width: 80%; The width of the container is 80% of the page width.

margin: auto; Horizontally centers the container within the page.

background-color: lightcyan; Makes the container color light cyan.

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header

Contains the styling for the top bar that contains the container title.

padding: 10px; Adds an inner padding of 10 pixels around the content to make the bar taller.

color: white; Makes the text color white in the top bar.

background-color: darkblue; Makes the top bar color dark blue.

section

Is the main content box (e.g., "School Information").

padding: 15px; Adds an inner padding (margin) of 15 pixels between the element's content (content box) and its borders.

h2

To control the styling of the subtitle, e.g., "Basic Information".

padding-bottom: 10px; To specify the spacing after the subtitle.

border-bottom: 5px solid blue; To create a blue line 5 pixels thick below the subtitle.

footer

Contains the styling for the bar at the bottom of the container.

…….

Similar to the header styling.

Self-assessment

Refer to the objectives at the beginning of the lesson and mark (✓) in the appropriate box for (I can....)

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Lesson Four

Create your website with the help of Artificial Intelligence

How can you create a website? What is the role of Artificial Intelligence in this?

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Objectives:

Place a (√) mark in the "...appropriate box for

At the end of the lesson, I will be able to	Good	Very Good	Need more effort
1- Design my own webpage.			
2- Practice the steps of creating simple websites using a free Artificial Intelligence tool.			
2- Develop my own webpage.			

Let's Interact:

Let's Learn

Dear student, in the previous lesson, you learned how to design and create a website for your school using HTML and how to style its pages using CSS. Modifying web pages requires you to learn more and more HTML commands, and adding or modifying the styling of the pages also requires more effort and time. However, with the advent of Artificial Intelligence, many tools and websites have become available that offer you these services to create, style, and edit websites with ease. All you have to do is use these AI tools or websites to create the attractive and beautiful websites you want.

Dear student, have you ever imagined that you could create your own website in less time? Yes, this is now possible thanks to the amazing technologies of Artificial Intelligence. This website can be your own digital window to the world, through which you can display your ideas, hobbies, or even your school project to the world! This is what your own website gives you. There are many students your age around the world who use the internet to publish their own creative content.

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Activity:

Dear student, in collaboration with your classmates, discuss whether creating a website is a complicated matter that requires advanced programming skills.

Activity:

Dear student, in collaboration with your classmates, discuss why we need a website.

In our digital world today, websites have become an essential part of our lives. Here are some reasons why owning a website is important:

A platform to express yourself: A place to display your hobbies, talents, and achievements in a creative way that reflects your personality.	A means of communicating with the world: A way to share your ideas and interests with people who share the same interests.
Showcasing school projects: An ideal platform to present your school projects and research in a professional and attractive way.	Developing future skills: An opportunity to learn important digital skills that will benefit you in your studies and future career.

Activity:

Dear student, with the help of your teacher and in collaboration with your classmates, discuss whether Artificial Intelligence can be used to design your website and how you can do that.

We have learned in previous years that Artificial Intelligence is a technology that enables computers to learn and think like humans. It can help us design and build websites based on our requests. Before the emergence of AI tools, creating a website required learning programming languages such as HTML, CSS, and JavaScript. Today, we can create professional websites in a matter of minutes without writing a single line of code!

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Artificial Intelligence can understand what you want and execute it quickly. All you have to do is tell it what you want your website to be like, and it will design and create it for you. AI can do the following:

- Understand simple commands and turn them into a professional design.
- Save time and effort in learning complex programming languages.
- Suggest creative ideas and designs that suit the theme of your website.
- Quickly modify the design based on your feedback.

Activity:

Dear student, with the help of your teacher and in collaboration with your classmates, search the internet for Artificial Intelligence tools for creating websites.

Artificial Intelligence Tools for Creating Websites:

Today, you will use smart tools that rely on advanced Artificial Intelligence technologies to help us create a beautiful and functional website. These smart tools understand what you want and translate it into a real design.

Wegic:	Jimdo Dolphin:
A tool that uses Artificial Intelligence to create websites based on the commands and preferences you provide. Features: - Easy-to-use interface. - Various design options suitable for students. - Link: wegic.ai	An easy-to-use platform that relies on Artificial Intelligence to generate websites based on simple information you provide. Features: - Can be used from a mobile phone. - Modern design suitable for small projects. - No technical skills required. - Link: jimdo.com

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In this lesson, we will use **wegic.ai** because it is easy to use and offers a free plan suitable for students. The steps for using it are applicable to all similar smart tools.

Remember: You don't need to write any code. Artificial Intelligence will do all the hard work for you.

Activity:

Dear student, with the help of your teacher and in collaboration with your classmates, discuss the type of website you would like to create today. Write down your ideas:

- The type of website you want to create (personal, blog, hobby site, school project, etc.).
- Choose 2-3 colors for the web pages that reflect your personality.
- Determine the theme of the website.
- The pages you will need to create on the site (e.g., Home, About Us, Contact Us, etc.).

Steps to create a website with the Wegic.ai Artificial Intelligence tool:

We will create a website step-by-step using text commands that we will give to the Artificial Intelligence through the **wegic.ai tool.**

Getting Started: 1. Go to https://wegic.ai/app 2. Register for a simple account using your email. 3. Click on "Start Now" and follow the steps.	

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Click on "Build Your Site"

First: Determine the type of website:

In the first step, you need to tell the Artificial Intelligence the type of website you want to create. Be clear and specific to get the best results for your site.

In the designated writing space, type a command for the Artificial Intelligence:

"Create a website for my school's reading club. It should be a simple and attractive site for a 13-year-old student. The name of the club is 'School Read Club'."

Note: The text commands you write to the Artificial Intelligence tool to create the site are called "prompts".

Conversational interface with artificial intelligence for typing website names Command input window	

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a- You will be asked for the name of the website: Choose a new, unused name that reflects the website. It is preferable to write the website name in English.

b- You will be asked what kind of content you want to display on your website (e.g., educational articles, book reviews, reading recommendations, etc.).

c- Follow the rest of the steps while giving commands to the site until you are finished.

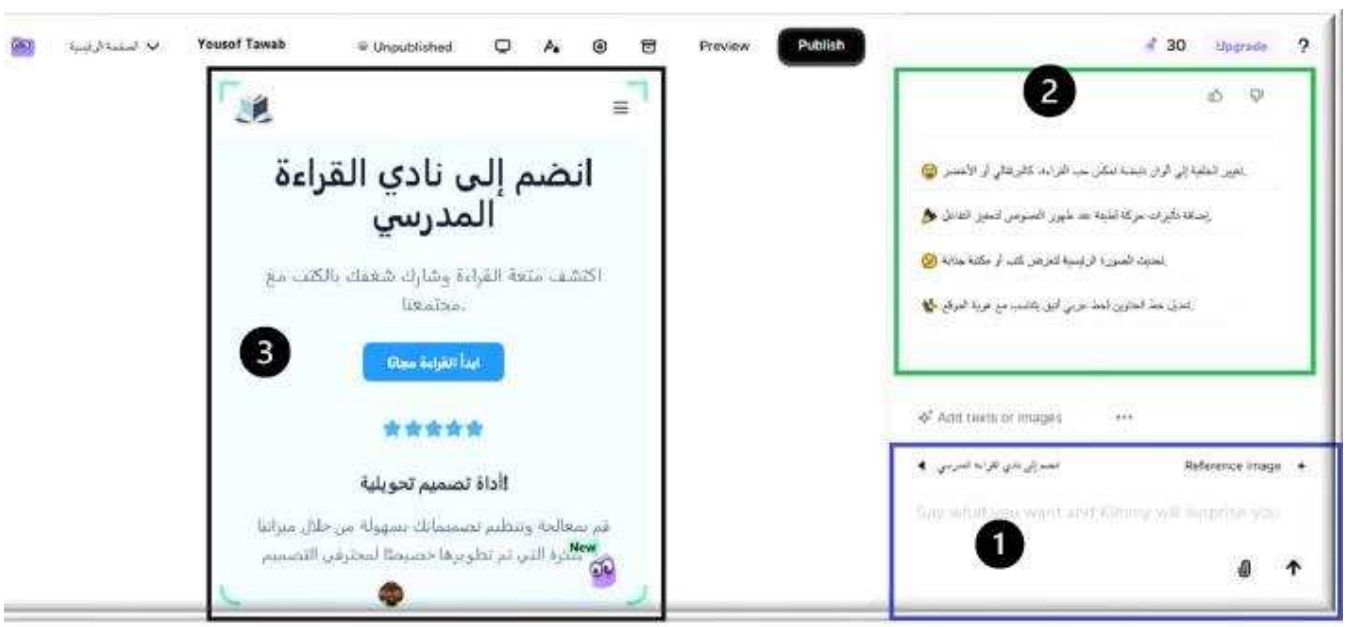
You can modify this command to suit the theme of your own website. For example:

- "Create a website to display my drawings."
- "Create a website about my favorite sports team."

Important note:

Be as specific as possible when describing your website. For example, instead of "Create a football website," you can say, "Create a website for the school football club I am a part of, which displays the team's matches, photos, and competition schedule."

You can preview the website while writing commands to the Artificial Intelligence, as shown in the following image:



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1 - Window for writing commands to the Artificial Intelligence.
2 - Window for viewing the chat between you and the Artificial Intelligence.
3 - Window for previewing the execution of the command by the Artificial Intelligence.

Second: Choose the design and colors:

After determining the type and name of the website, you can direct the Artificial Intelligence to choose the design and colors you prefer that suit the theme of your website and reflect your personality.

In the designated writing space, type a command for the Artificial Intelligence:

"Make the design modern and colorful, and use blue and white as the main colors. I want the design to be suitable for a 13-year-old student."

Common design styles:	Ideas for color combinations:
- Modern: Simple and elegant. - Playful: Bright colors and animated elements. - Professional: Elegant and calm. - Creative: Unconventional and distinctive.	- Blue, green, and white. - Purple, pink, and light white. - Black, gold, and white.

Important note:

Choose colors that harmonize with each other (2-3 colors maximum). Conflicting colors can make your website difficult to read and visually jarring.

Third: Add basic pages:

Every website needs a structure of different pages to organize the content. Let's ask the Artificial Intelligence to create these pages.

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In the designated writing space, type a command for the Artificial Intelligence:

"Add a home page, an 'About Us' page, an 'Our Activities' page, and a 'Contact Us' page."

Suggested basic pages:

- Home Page: Overview and welcome.
- About Us: Information about you or your project.
- Blog/Articles: A place to publish your thoughts.
- Photo Gallery: Pictures that express your interests.
- Contact Us: Ways to get in touch with you.

Fourth: Add content to each page, for example:

In the designated writing space, type a command for the Artificial Intelligence:

"Add a page titled 'About Us' that explains that this website is for my school's reading club. We are a group of students who are interested in reading and we meet weekly to discuss the books we read."

Don't worry if the text suggested by the Artificial Intelligence is not perfect. You can edit it later to reflect your personality.

Fifth: Add a photo gallery:

Photos add life and appeal to your website. Let's ask to add a special section to display photos.

In the designated writing space, type a command for the Artificial Intelligence:

"Add a photo gallery where I can display pictures of the club's events and the covers of the books we have read. I want the photos to be displayed in a beautiful grid that allows visitors to click on a photo to see it in a larger size."

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Available photo gallery types:

- Grid Gallery: Equally sized photos arranged in a grid.
- Slideshow: Animated photos that appear one after the other.
- Masonry Gallery: Photos of different sizes arranged in an interlocking pattern.
- Lightbox Gallery: Opens in a larger view when clicked.

Important note:

The Artificial Intelligence will add default photos. You can replace them with your own photos later.

Sixth: Add a contact form and contact information:

It is important for your website visitors to be able to contact you. Let's add a way for them to get in touch.

In the designated writing space, type a command for the Artificial Intelligence:

> "Add a contact form on a separate page called 'Contact Us' so that those interested in joining the club can send their requests. Also, add contact information such as the club's email and meeting times."

What you can add in the contact section:

- A contact form for visitors to send you direct messages.
- Email (with your teacher's and parents' permission).
- Social media links (if you have them).
- A QR code that leads to your website or contact information.

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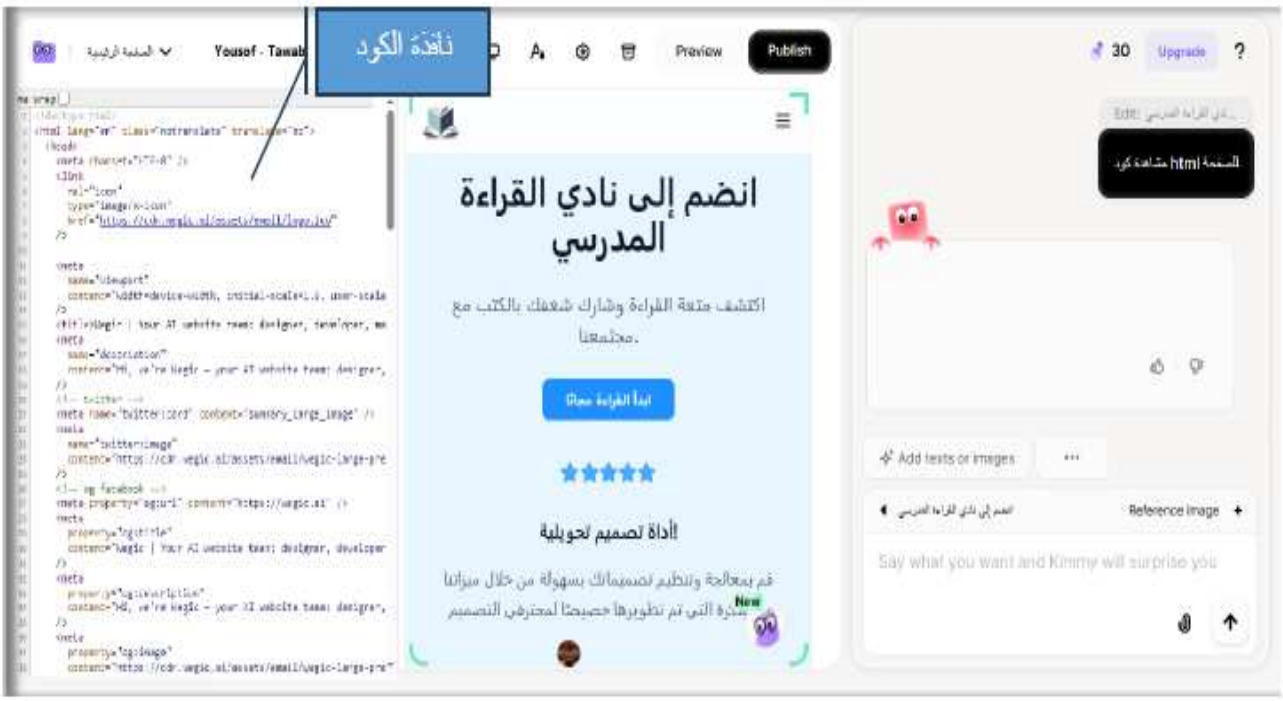
Important security tip:

Remember to use safe contact information and with the permission of your teacher or supervisor and your parents. Be careful when sharing your personal information on the internet and consult your parents or teacher before adding real contact information.



Customize and edit your website:

After the Artificial Intelligence has created the basic structure of your website, it's time to add your personal touch and make it unique!

Edit the texts:

Click on any text on the website to edit it and add personal content that expresses you.
In the designated writing space, type a command for the Artificial Intelligence:

"Edit this text to be more enthusiastic and suitable for middle school students."

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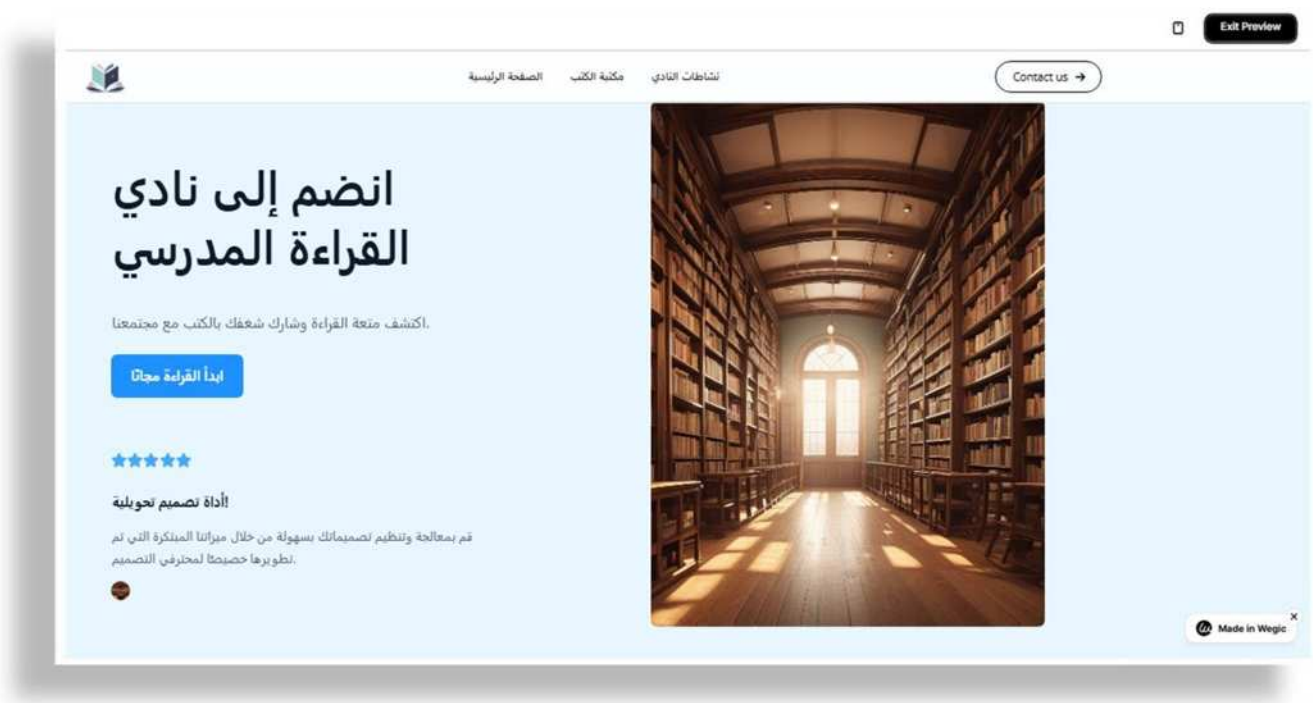
Colors and fonts:

Try different color combinations to find what expresses your personality and the theme of your website.

In the designated writing space, type a command for the Artificial Intelligence:

"Change the color of the headings to light green and the background to beige."



The final look of the website is ready to be published on the internet.

Important tips for a successful website:

<u>Additional ideas to improve your website:</u>

- Add a custom logo to your website.
- Add a schedule if your website is for a club or team.
- Include short video clips (if available).
- Add links to other useful pages.

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Tips for choosing colors:

- Use only 2-3 primary colors.
- Make sure there is good contrast between the text and the background.
- Choose clear and easy-to-read fonts.

Your website should be characterized by:

- Simplicity: There is no need to complicate your website with many elements. A simple and organized design is more attractive and easier to use.

- Mobile-friendliness: Most people browse the internet on their smartphones, so make sure your website looks good on small screens.

- Privacy and security: Do not share your personal information such as your address or phone number on your public website. Use a contact form instead.

- Continuous updates: A website is like a garden; it needs constant care. Update its content regularly to keep it fresh and useful.

Activity:

With the help of your teacher and in collaboration with your classmates:

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Plan your website:

Use a piece of paper or a notebook and write down your answers to the following questions:

1. What is the theme of the website you want to create?
2. What pages do you want to have on your website?
3. What colors do you prefer to use?
4. What kind of content will you add to the website (text, photos, videos, etc.)?
5. Who do you expect to visit your website?

Create your website using Artificial Intelligence tools:

Follow these steps:

1. Open the wegic.ai website and register for a new account or use another tool recommended by your teacher.
2. Choose the option to create a website using Artificial Intelligence (wegic.ai).
3. Write the commands you planned in the first activity.
4. Review the results and make the necessary adjustments.

Present and evaluate the website:

After you have finished creating your website:

1. Show your website to your classmates.
2. Ask them for positive feedback and suggestions for improvement.
3. Take notes and use them to improve your website later.

Important notes:

Get your teacher's and parents' approval before publishing any personal information online. Safety and privacy come first!

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Future project ideas:

- A website for a school's online magazine.
- A platform for sharing class projects.
- A digital art gallery for the school.
- A science blog for projects and experiments.

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Questions and exercises on the fourth lesson:

First: Choose the correct answer from the following options:

1. What is the primary purpose of creating a website?

a) Playing games only

b) Communicating and displaying information to the world

c) Storing personal files

d) Sending text messages only

2. What has made creating websites much easier nowadays?

a) An increase in the number of programmers

b) The use of Artificial Intelligence technologies

c) A decrease in the price of computers

d) The disappearance of programming languages

3. One example of AI tools that help in building websites is:

a) Paint program

b) Word program

c) wegic.ai

d) Calculator

2.When using AI tools to build a website, do you need to be an expert in programming?

a) Yes, you must be a professional

b) Yes, you need some experience

c) No, you do not need advanced programming experience

d) Only if you want a complex website

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3.What are the text commands we write for the AI tool to create the website called?

a) Programming code

b) Illustrative images

c) prompt

d) Internet link

4.If you want your website to be about a sports club, what is the most suitable command (prompt) for the first step?

a) "Choose a blue design"

b) "Add a contact page"

c) "Create a website for a sports club"

d) "Add pictures of books"

5.To add information about yourself or your website's topic, which page do you usually create?

a) Contact page

b) Images page

c) "About Us" page

d) Home page

6.What is the importance of defining the colors and general design of the website at the beginning of the work?

a) To make the icons appear better

b) To customize the basic appearance of the website

c) To increase the website's speed

d) To attract more programmers

7.What does the images page add to your website?

a) Introductory texts

b) Contact information

c) Attractive visual elements

d) Audio clips

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8.Which of the following is not considered contact information that can be added to the website?

a) Email

b) Social media page link

c) Phone number

d) Designer's name

9.After the AI creates the basic structure of the website, what can you do?

a) Nothing, no modifications can be made

b) Make simple modifications to the design and texts

c) Recreate the website from scratch

d) Delete the entire website

10.Why is it important for prompts to be simple and clear?

a) To reduce website size

b) To make the AI understand your request better

c) To increase the number of visitors

d) To save time when publishing

11.The main goal of using AI in website building in our lesson is:

a) To turn you into professional web developers

b) To introduce you to the capabilities of AI in website creation

c) To save money for programmers

d) To create game websites only

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Second: Mark (✓) next to the correct statement and (✗) next to the incorrect statement:

1.Creating a website with AI requires you to write complex programming codes. ( )

2.The importance of a website is limited to large companies only. ( )

3.You can use Wegic.ai to create a simple website using text commands. ( )

4.The "About Us" page is used to display activity photos. ( )

5.A prompt is the text command you give to AI to understand your request. ( )

6.After creating a website with AI, you cannot make any modifications to it. ( )

7.Choosing colors and design at the beginning of the work is not very important. ( )

Third: Complete the following sentences with appropriate words or phrases:

1.To create a website that displays your ideas to the world, you need to ……..

2.AI technologies help facilitate the process of ……. creating websites.

3.A tool like wegic.ai works based on the …… text commands you write for it.

4.A prompt is …… the text command that we input into the AI tool.

5.The first step in creating a website with AI is: defining ……. the topic of the website.

6.To add a place to display your photos on the website, you can ask the AI to add a …… section for images.

7.The "About Us" page is used to provide …… introductory information about the website's topic.

8.Text commands should be simple and ……. for the AI to understand them.

9.After creating the website, you can make …… to the texts and design.

10.One of the most important aspects of websites in the current era is that they are a means of ……. and displaying information.

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Fourth: Answer the following question:

1.If you had the opportunity to create your own website, what would its topic be, what are the two most important pages you would like to add, and why?

Self-assessment:

Refer to the objectives at the beginning of the lesson, and mark (✓) in the appropriate box for (I can....)

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